

Solving Percent solution problem

There are two major types of percent solution:

1. Calculating the percent by mass of solute to solution.
2. Calculating how much solute to make a solution of a given percent.

There are other problems but we're not going there!

Here is how it is done

1. What is the percent solution of a sugar solution that has 54 grams in 5600 g of solution?

using the formula from the reference sheet; the problem sets up like this

$$\% = \frac{54\text{g sugar}}{5600\text{g solution}} \times 100\% = 0.96\% \text{ or } 1\%$$

Other variations of this problem will not give you the mass of solution. The problem will give the specific gravity of the solution and the volume. These two numbers should be multiplied together to find the mass of the solution.

2. If 325 grams of sugar are dissolved in sufficient water to make 3800 mL of solution having a sp. gr. of 1.1764, what is the percentage concentration or the solution?

a) mass of solution = 3800 mL \times 1.1764 = 4470.3g solution

b) $\% = \frac{325\text{g}}{4470.3\text{g}} \times 100\% = 0.07\%$

The second form of the problem will ask how much solute is needed to make a solution of a specific percent.

3. How many grams of sodium chloride will be needed to make 550 g of 1.25 % solution?

$$1.25\% = \frac{x}{550\text{g}} \times 100\% = 6.88\text{g NaCl}$$